

**Missouri Assessment Program
Spring 2005**

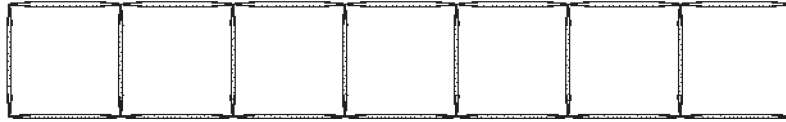
Mathematics

Anchor Pages for Released Items

Grade 10

6

Students were asked to make a row of squares using toothpicks. The diagram below shows the arrangement of toothpicks for the first 7 squares.



How many toothpicks will it take to make a row of 100 squares? In the space below, use words, numbers, or symbols to justify your answer and write your answer on the line.

4 - 1st square
 3 - 99 squares

$99 \times 3 = 297$

$$\begin{array}{r} + 4 \\ \hline 301 \end{array}$$

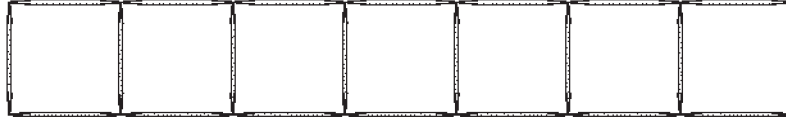
301 toothpicks

Missouri Math Operational 2005
 Grade 10
 Session 1 Item 6
 Score: 2 POINT ANCHOR
 >Correct answer
 >Correct justification

227922082

6

Students were asked to make a row of squares using toothpicks. The diagram below shows the arrangement of toothpicks for the first 7 squares.



How many toothpicks will it take to make a row of 100 squares? In the space below, use words, numbers, or symbols to justify your answer and write your answer on the line.

1st Box = 4
Additional Box = 3

$$4 + 3(100) = \text{number of toothpicks}$$

$$304$$

304

toothpicks

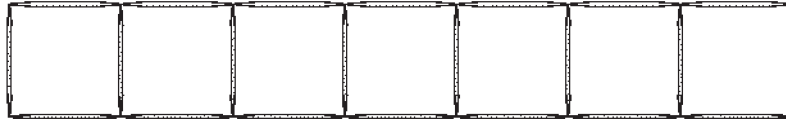
Missouri Math Operational 2005
Grade 10
Session 1 Item 6
Score: 1 POINT ANCHOR
>Incorrect answer

>Correct justification of starting the pattern with 4 then adding 3.

227590165

6

Students were asked to make a row of squares using toothpicks. The diagram below shows the arrangement of toothpicks for the first 7 squares.



How many toothpicks will it take to make a row of 100 squares? In the space below, use words, numbers, or symbols to justify your answer and write your answer on the line.

↑ 22
9
31
x 10
300
31
310

31 toothpicks for 10 squares

310 toothpicks

Missouri Math Operational 2005
Grade 10
Session 1 Item 6
Score: 0 POINT ANCHOR
>Incorrect answer (310)
>Incorrect justification

228265278

3

Dan called a tow truck company to tow his car. The company charges a fee of \$22.00 plus \$2.00 per mile for each mile towed. Write an equation that will allow Dan to calculate the total towing bill (y) when he knows the number of miles towed (x).

$$y = 2x + 22$$

If Dan's towing bill was \$86.00, how many miles was his car towed?

$$\begin{array}{r} 86 = 2x + 22 \\ -22 \quad -22 \\ \hline \end{array}$$

$$64 = 2x$$

$$\begin{array}{r} -2 \quad -2 \\ \hline \end{array}$$

$$32 = x$$

32 miles

Missouri Math Operational 2005
Grade 10
Session 2 Item 3
Score: 2 POINT ANCHOR
>Correct equation
>Correct answer

3

Dan called a tow truck company to tow his car. The company charges a fee of \$22.00 plus \$2.00 per mile for each mile towed. Write an equation that will allow Dan to calculate the total towing bill (y) when he knows the number of miles towed (x).

$$y = 22.00 + 2.00(x)$$

If Dan's towing bill was \$86.00, how many miles was his car towed?

$$\begin{array}{r} 86.00 = 22.00 + 2.00(x) \\ - 22.00 - 22.00 \end{array}$$

$$\begin{array}{r} 64.00 + 2.00(x) \\ - 2.00 - 2.00 \end{array}$$

$$62.00 = x$$

375112

Missouri Math Operational 2005
Grade 10
Session 2 Item 3
Score: 1 POINT ANCHOR
>Correct equation
>Incorrect answer

3

Dan called a tow truck company to tow his car. The company charges a fee of \$22.00 plus \$2.00 per mile for each mile towed. Write an equation that will allow Dan to calculate the total towing bill (y) when he knows the number of miles towed (x).

$$y = 22 + 2x$$

If Dan's towing bill was \$86.00, how many miles was his car towed?

$$y = 22 + 2(16) = \$194$$

$$\begin{array}{r} 186 \\ 2 \\ \hline 172 \\ + 22 \\ \hline 194 \end{array}$$

Missouri Math Operational 2005
Grade 10
Session 2 Item 3
Score: 0 POINT ANCHOR
>Incorrect equation (only one variable)
>Incorrect answer